

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/41058

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61F 13/00; A61K 9/14, 47/36 ; C08B 37/00;

US CL : 424/422, 484, 488; 514/54

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/422, 484, 488; 514/54

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,100,668 A (EDELMAN et al) 31 March 1992 (31.03.1992), entire document, particularly abstract, col. 2, lines 5-38, and claims 1-10.	1, 8-16, 19, 20, 25-34, 37, 46, and 47
X, P	US 6,723,344 B2 (SAKIYAMA-ELBERT et al) 20 April 2004 (20.04.2004), entire document, particularly col. 1, line 64 - col. 5, line 2, and claims 1-20.	1-5, 8-16, 19, 20, 22-34, and 36
X	US 6,303,585 B1 (SPIRO et al) 16 October 2001 (16.10.2001), entire document, particularly claims 1-30.	1, 9-16, 19, 20, 25-34, 46, and 47

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

10 June 2005 (10.06.2005)

Date of mailing of the international search report

20 JUN 2005

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Anand Desai

Telephone No. (571) 272-0947

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/41058

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

**BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING**

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is insulin.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is erythropoietin.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent are bone morphogenic proteins.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is human growth hormone.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is human chorionic gonadotrophin.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent are polysaccharides.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is transferrin.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent are TGF-beta receptors.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent are integrin heterodimer receptors.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is Fas-L.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is VEGF.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/41058

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is PDGF.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is FGF.

A particle comprising a complex formed by a bioactive agent and a complexing agent, wherein the particle has a bioactive function conferred by the bioactive agent, wherein the bioagent is CAR.

The following claim(s) are generic: claims 1-7, 13-17, 19-27, and 32-36 are drawn to a particle comprising a complex formed by a bioactive agent and a complexing agent. Claims 37-47 are drawn to a method of making the particle comprising a complex formed by a bioactive agent and a complexing agent.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: The technical feature linking the species appears to be that they all relate to particles comprising bioactive agents. However, Edelman et al. (U.S. Patent 5,100,668) disclose a controlled release system containing heparin and a growth factor (see entire document, particularly claim 1). Thus, the bioactive agent does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art. Accordingly, the species are not so linked by the same or a corresponding special technical feature. Therefore each species is composed of different peptides comprising different functions.

### Continuation of B. FIELDS SEARCHED Item 3:

EAST, BIOSIS, USPATFULL, CAPLUS, EMBASE, MEDLINE, SCISEARCH, DGENE, CANCERLIT, BIOTECHNO, ESBIODBASE. Search terms: platelet derived growth factor, dextran sulfate, particle, ionic interaction, growth factor, chitosan, heparin sulfate, hyaluronic acid